

Learning Style Preferences and Its Effect on Academic Performance Among Undergraduate Medical Students at Government Medical College, Palakkad

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ABSTRACT

Introduction: Learners have their own preferences in receiving and processing information. Finding out different learning styles of students is important to provide students with a better learning experience. **Aims:** To find out the different learning styles of students and association of gender and academic performance with learning styles. **Methods and Material:** A cross-sectional study was conducted among 100 medical students using convenience sampling method. The questionnaire used in the study was Honey and Mumford Learning Style Questionnaire. Learning styles were accordingly described as Activist, Theorist, Pragmatist and Reflector. Socio-demographic variables like age and gender as well as previous university examination score of the students were also collected. The data was analysed in terms of proportions, chi-square test and one-way ANOVA. **Results:** Out of 100 students, 74% were females and the remaining 16% were males. The highest mean value of the scores was found for reflector style of learning (15.59 ± 2.4) followed by pragmatist (13.4 ± 2.6). The lowest mean score was found for activist style of learning (12.26 ± 3.0). 51.1% of students showed very strong inclination for activist learning style, 40% of students showed a strong inclination for reflector learning style, 45.6% had a moderate preference for theorist learning style and 55.6% of students had a moderate preference for pragmatist learning style. **Conclusions:** The students had more preference for activist and reflector learning styles. Gender and previous academic performance did not show any significant association with the learning styles.

KEY WORDS: Learning styles, Honey and Mumford questionnaire, Activist, Theorist, Pragmatist Reflector, academic performance.

Introduction

With the shift from an instructional to a learning paradigm, there is growing acceptance that understanding the way students learn is the key to educational improvement. To achieve a desired learning outcome, one should provide teaching and counselling interventions that are compatible

with the students learning styles^[1]. Learning styles comprise cognitive, emotional and physiological factors which indicate how a student understands and responds to what he is taught^[2]. A student's style of learning, if accommodated, can result in improved attitudes towards learning and an increase in thinking skills, academic achievement and creativity^[3]. Each student may have their own preferences in receiving and processing information. Thus, acquiring knowledge on student's learning style is important to provide students with satisfactory learning experience. The information on learning style can also benefit the students by helping them to formulate appropriate learning strategies to enhance their learning^[4].

Access this article online

Quick Response Code:



Website: www.jmsh.ac.in

Doi: 10.46347/jmsh.v9i2.22.4

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Learning styles or preferences are modes by which educators become aware of different techniques which could be implemented on students. Knowing students' preferences of learning styles will help lead to an effective design of learning and teaching materials and strategies as well. Such design will reflect many individual differences that are resulting from each person's biological, developmental and psychological experiences^[5]. Understanding learning styles of students can help instructors plan their teaching lessons and strategies^[6]. Yet, the utilization of this knowledge in a formal way to enhance the teaching processor learning environment has been almost absent until recently. In medical education, the emphasis on covering a fixed syllabus, often extensive, in a limited time period with the time-tested method of didactic lecture provided little scope for assessment of learning styles and modification of teaching styles^[7]. Knowledge of students learning styles will help educators implement different learning strategies for better comprehension of the lesson. Similarly, the student is benefited since he is able to understand his own learning style and thereby utilise it effectively. He can also learn to combine and use other learning styles consciously that would facilitate a better understanding of the lesson.

There are different classifications of learning styles. One classification method focuses on the route by which students' best perceive and remember information: visual, auditory, or kinaesthetic^[8]. Grasha and Reichmann developed a learning style inventory which has categorized student learning behaviour preferences as Avoidant, Dependent, Participant, Independent, Competitive and Collaborative^[9]. The learning styles have been classified as Activist, Theorist, Pragmatist and Reflector as per Peter Honey and Alan Mumford. An activist is a person who would prefer to act on an issue or topic and would also be interested in new challenges. A Reflector is one who would carefully listen, reflect and then act.. The theorist believes in logic and also sees to minute details. A pragmatist is practical minded and a problem solver.^[10].

Honey and Mumford claimed that an individual tends to rely naturally on one of these approaches when they are engaged in learning or other task activities^[11]. Activists grasp a better understanding of topics when exposed to activity based learning like group discussions and role-play. Reflectors would learn better while on clinical rotations or watching

a video. Pragmatists would prefer practical lessons like workshops and demonstrations. Theorists would prefer a learning environment which would include lectures and discussions^[10,12].

Learning styles are considered as one of the factors of success in higher education. However, research has been limited in correlating learning styles to learning outcomes which has hampered the application of learning style theory to actual classroom settings^[13].

So with this background the primary objective of the study was to identify the different learning styles of students. The secondary objectives were to determine if there are gender differences with respect to learning styles and also to find out any association between learning styles and academic performance of the students.

Materials and Methods

This Cross-Sectional study was conducted among Third year MBBS students of Government Medical College, Palakkad. We took a sample of 100 students who were pursuing third year MBBS. All 3rd year medical students willing to take part in the study were included. Those students who were absent on the day of questionnaire administration were excluded. The validated Honey and Mumford Learning Style Questionnaire was used in our study. The questionnaire consists of 80 items and it was explained to the students before it was filled by them. The total scores obtained in each column against each learning style i.e. Activist, reflector, theorist and pragmatist were added up. The preference of each learning style was found based on the scores for each learning style. The exam scored in the previous University examination was collected to find any association between learning style and the academic performance of the student. The marks entered by the student were cross-checked with the exam scores secured by the student from the Examination Section of the college. We obtained Institutional Ethical committee clearance for the study. Written informed consent was obtained from students before administering the questionnaire

The data collected was entered in MS Excel and analysed using SPSS 21trial version. The data was expressed in terms of proportions, mean and standard deviation. Chi square test was used to test for any association between learning styles and gender. One-way ANOVA was used to test for association between learning styles and academic

performance.

Results

This Cross-Sectional study was conducted among 100 Third year MBBS students of Government Medical College, Palakkad in 2019. 90 students participated in the study while 10 were absent on the day of data collection. Among study participants, 74% were females and the remaining 16% were males. The mean age group was $22.3 \text{ years} \pm 0.74$.

Table 1 shows the scoring pattern of different learning styles. Based on this scoring pattern, learning style preferences among the participants were analysed.

Table 1: Scoring pattern based on preference of learning styles

Learning Style	Very strong preference	Strong preference	Moderate Preference	Low preference	Very low preference
Activist	13-20	11-12	7-10	4-6	0-3
Reflector	18-20	15-17	12-14	9-11	0-8
Theorist	16-20	14-15	11-13	8-10	0-7
Pragmatist	17-20	15-16	12-14	9-11	0-8

Table 2 shows that the highest mean value of the scores was found for reflector style of learning (15.59 ± 2.5) followed by pragmatist (13.4 ± 2.7). The lowest mean score was found for activist style of learning (12.26 ± 3.0). The reflector style had the highest mean scores among both females (15.59 ± 2.5) and males (15.56 ± 2.5). Among females, the lowest mean score was found for activist style (11.99 ± 2.9). Among males; lowest mean score was for theorist style of learning (13.31 ± 2.1).

Table 2: Mean learning style score among study participants

Learning style	Total score Mean \pm SD	Males Mean \pm SD	Females Mean \pm SD
Activist style	12.26 ± 3.0	13.50 ± 3.3	11.99 ± 2.9
Reflector style	15.59 ± 2.5	15.56 ± 2.5	15.59 ± 2.5
Pragmatist style	13.40 ± 2.7	14.06 ± 2.1	13.12 ± 2.4
Theorist style	12.56 ± 2.6	13.31 ± 2.1	12.39 ± 2.6

Supplementary S1 Table shows that 51.1% of students showed a very strong inclination for activist learning style; 40% strongly preferred reflector learning style; 55.6% of students had a moderate preference for pragmatist learning style and 45.6% had a moderate preference for theorist learning style. With respect to gender, males (62.5%) had a very strong preference when compared with females (48.6%) for activist learning style. Females (40.5%) had a strong preference when compared with males (37.5%) for reflector learning style. Males (62.5%) had a moderate preference when compared with females (54.1%) for pragmatist learning style. Females (45.9%) had a moderate preference when compared with males (43.8%) for theorist style. We did not find any significant association between gender and different learning styles.

Supplementary S2 Table shows the distribution of mean marks of the students corresponding to various learning styles. No significant association was obtained between learning styles and marks of the students using one-way ANOVA test.

Discussion

In our study reflectors had the highest mean score while activists had the lowest mean score. This finding is similar to the study among Malaysian students^[11]. In this study, 62.5% of males had very strong preference for activist style of learning compared to 37.5% of males who had strong preference for reflector learning style. 48.6% of girl students had very strong preference for activist style of learning compared to 40.5% of females with strong preference for reflector learning style. The main learning styles among both male and female students were found to be the activist and reflector styles. However, the mean score of reflector style of learning among females is more than the activist style of learning. This is consistent with the findings by Mohammed S JANS among Indian students in Malaysia^[11]. This is also consistent with the theory stated by Gurian that the female is left brain dominant as opposed to the male which is right brain dominant^[14]. According to Honey and Mumford, the left brain is associated with Reflector and Theorist while the right brain is associated with activist and pragmatist learning style^[15].

In our study, we found that the mean score of males is highest for reflector and least for theorist style. The nearly equal mean values of both males and females with respect to reflector style of

learning are consistent with the study findings of Mohammed S JANS^[11]. There was no significant association between gender and different learning styles. This is similar to the finding of Mohammed S JANS in his study on different ethnic students in Malaysia^[11]. This could be attributed to similar learning environment for male and female students. The finding is also similar to study by Mohammed S JANS and Hassan SHBS in their study on learning styles of students of Malaysian Universities^[16]. We found no significant association between different learning styles and marks using one –way ANOVA test. This was also reported by Mohammed S JANS and Hassan SHBS in their study on students of Malaysian Universities which did not find any significant difference between academic success and learning styles^[16]. The findings of the current study are also similar to the finding from study conducted by Urval RP et al. which showed that sex and previous academic performance had no relation to learning style preference. However, in this particular study the VARK questionnaire was used^[5].

The main limitation of our study is that it had a small sample size and higher proportion of females in the sample. Hence, the findings from the study cannot be generalised to all medical students. Only the previous University examination scores of the students were considered in our study which is another limitation.

In conclusion, the males and females in our study had more preference for activist and reflector learning styles. Gender and previous academic performance did not have any significant association with the learning styles.

In order to improve learning outcomes in these students, it would be better to have various types of teaching learning methods incorporated into the curriculum so that they are aligned to the students' learning styles rather than conducting predominantly didactic lectures as is the norm. The best practice would include a teaching paradigm that addresses and accommodates multiple dimensions of learning styles^[17]. The authors also felt that formative assessments based on the teaching learning methods should be taken into account in order to provide a better understanding of achievement of learning outcomes of the students in addition to summative assessments.

Future research needs to focus on effectiveness of tailoring appropriate teaching learning methodolo-

gies for all the different learning styles. A student centric approach in the curriculum implementation is important which should include their learning styles so as to improve learning outcomes. This would in turn reflect in the improved academic performance of the students.

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How to cite this article: Zachariah SM, Karthikeyan S, Deepak KS. Learning Style Preferences and Its Effect on Academic Performance Among Undergraduate Medical Students at Government Medical College, Palakkad. J Med Sci Health 2023; 9(2):152-156

Date of submission: 05.01.2022

Date of review: 04.02.2022

Date of acceptance: 03.07.2023

Date of publication: 30.08.2023